

TRANSBOUNDARY GAS GROUP MEETING NOTES

SKAMANIA LODGE SKAMANIA, WASHINGTON

April 28, 2004

1. Greetings and Introductions.

Chair Mark Schneider, of NOAA Fisheries, welcomed everyone to today's meeting, then led a round of introductions and a review of today's agenda. Schneider thanked the Bonneville Power Administration for paying for the room and lunch for today's meeting.

2. Overview of Meeting With the BC-Washington Environmental Cooperation Council.

Schneider noted that this meeting took place two months ago; he said he had attended it, together with Robin Drew and Chris Maynard. Schneider said that, several years ago, the ECC had asked the TGG to consider expanding its focus from dissolved gas only to water quality in general. Our response was that we were willing to consider that step, he said, but needed more clarity as to exactly what the ECC meant. At the most recent ECC meeting, we provided a slide show explaining the history, background and purpose of the TGG, dissolved gas problems in the Columbia basin, and a description of TGG accomplishments. At the end of the meeting, the ECC reiterated their belief that the TGG is the appropriate group to consider transboundary water quality problems in addition to gas, said Schneider; that discussion led to the question of what is the need for doing this, and is there a need? The ECC would like us to try to answer that question in time for their next meeting.

Schneider noted that the TGG steering committee has discussed this issue by conference call. One conclusion we reached was that, if we are to take on such an expanded role, the TGG will need to seek out some additional technical expertise in non-gas water quality areas, he said. One possible approach might be to form a TGG subgroup to address a specific task, bringing in whatever outside expertise we feel would be appropriate, said Schneider. So again, he said, do the other TGG participants see the need to expand the TGG's focus beyond dissolved gas, to include other transboundary water quality parameters?

The group devoted a few minutes of discussion to this topic, touching on the history and role of the ECC, as well as the potential benefits of a closer collaboration between the TGG and ECC. There was general agreement that the sharing of resources and data between the two organizations would be valuable.

3. EPA Restoration Priorities (Water Quality, Habitat, Toxins Etc.) In the Columbia Basin.

Mary Lou Soscia led this presentation. She noted that the EPA has recently identified the Columbia River Basin as a national priority for water quality restoration. I thought it might be helpful to share a sort of 20,000-foot overview of EPA's commitment to the Columbia basin, she said, in terms of the thinking you might be doing about other areas. In the course of her presentation, Soscia touched on the following major topics:

- An overview of EPA – its organization, role and responsibilities
- The goals of EPA's Columbia basin restoration effort: to protect public health, and to aid in the recovery of Pacific salmon, by reducing sources of contamination and improving water and habitat quality in or near waters of the Columbia basin.
- Specific areas of emphasis and their priority (habitat and water quality): water temperature and salmon recovery (high), Columbia and Snake River mainstems (high), TMDLs and commitment to subbasin planning processes (high), support to key Columbia River watersheds (high), data collection and monitoring (high)
- Specific areas of emphasis and their priority (toxics): Lake Roosevelt (high), reducing or eliminating new PCB loading (high), follow-up on the Columbia Basin Fish Contamination survey (high), Portland Harbor Superfund cleanup (high), Coeur d'Alene Basin restoration effort (high)

Soscia provided some additional details about the specific areas of emphasis within these major EPA efforts. Soscia also discussed some of the efforts to which EPA is providing financial assistance, including the Lower Columbia River Estuary Partnership (\$700,000 in 2003) and the Clark Fork Pend Oreille (\$1 million in 2003). Soscia also discussed EPA's monitoring efforts, including the agency's involvement with the Pacific Northwest Aquatic Monitoring Partnership and EPA's R&D lab in Corvallis, Oregon. She noted that EPA is very interested in using the PNAMP program to bring the many ongoing monitoring efforts in the Columbia basin together, and to improve data coordination among them. EPA is very committed to providing technical assistance to Columbia basin monitoring, Soscia said.

In conclusion, said Soscia, EPA has made the Columbia a regional and national priority for salmon and water quality restoration; we are interested in working with others who share our interest. She said that anyone who would like more information about any of these programs should contact her (at 503/326-5873) or Helen Rueda (at 503/326-3280) directly.

4. Discussion: Diversification of TGG.

The discussion then returned to the request from the Environmental Cooperation Council that the TGG consider expanding its scope beyond dissolved gas to include

other water quality parameters. Again, said Schneider, do the other TGG members see the need for such an expansion? Might it be beneficial from a data sharing standpoint, for example? Schneider cited Helen Rueda's efforts to compile data and information on the various hydroelectric projects in the Columbia basin as an example of the kind of information that deserves broader dissemination. The idea of a single unified database that tells you anything you might want to know about each project in the basin, from a water quality standpoint, is certainly an appealing one, Schneider said.

Paul Pickett noted that it isn't just the data itself – it is the compatibility of various sources of data that might be an issue. Another participant wondered about the effects of this change on the TGG membership – would there be other people who would need to be here? he asked. The group discussed the need to bring in experts on water temperature, toxics and other parameters if the group's focus is expanded. What would the group think about moving beyond hydro, to include agriculture, mining or sediment, for example, other parameters and activities that can impact water quality. My concern is that very few of the current participants in the TGG have overt programs to deal with those issues, replied another participant – it might be dangerous to shift our emphasis away from dissolved gas to include such a broad focus, because that might bleed available funding away from water temperature and dissolved gas, the areas where our primary expertise lies, she said.

Chris Maynard described some of the non-gas water quality issues the Washington Department of Ecology sees in the basin, noting that many are being addressed through other forums. Still, closer cooperation between B.C. and Washington might help solve some of the logistical issues that might be somewhat broader than the current purview of the TGG.

Tony Grover noted that one reason the TGG has been successful in probing deep beyond both sides of the border into the technical issue of dissolved gas in the Columbia basin is that it has maintained its original focus, without getting bogged down in policy issues. My advice is to stay on your course of transboundary communication on hydro-related dissolved gas issues, he said – I would suggest caution in moving away from that core focus, because you are a world-class example of transboundary cooperation. Soscia agreed, noting that, based on her own experience, many of the other water quality issues the group is discussing are quite overwhelming. If you want to expand your focus, she said, I would suggest that you choose one additional parameter, but don't try to take them all on.

The discussion continued in this vein for some minutes. Ultimately, Schneider summarized what he had heard as follows: that the group should stay the course on hydro-related issues, fish and dissolved gas in the Columbia River Basin. It was further suggested that, if another group is needed to address non-gas-related water quality issues in a transboundary context, that the TGG offer to provide guidance to the ECC on its formation. There may be an opportunity to explore greater cooperation in the water temperature and data sharing realms, however. Schneider said the TGG steering committee will provide a written summary of this discussion for presentation at the next

ECC meeting, and will report back on the outcome of that meeting at the TGG's October meeting. There was general agreement that this approach makes sense.

5. New TGG Issues for Consideration.

Maynard suggested that it might be worthwhile to place a greater emphasis on what each TGG participant is doing in the water quality arena, and on the development of compatible data sets. That could include dissolved gas alone, or it could include other water quality parameters as well. To that end, said Maynard, it might make sense to develop a TGG website, with links to all of the various activities we're doing and to the plans and other documents we've developed. The website would also include contact information for each participating agency or organization. To me, he said, this step seems like a no-brainer. Schneider noted that the TGG presently has a page on the NOAA Fisheries website, which could be expanded; the group could also choose to develop a stand-alone website, he said. It was agreed to form a TGG subcommittee, to include Pickett, Maynard, Robyn Roome, Kelly (last name not stated) and others as needed to begin work on the website.

6. Waneta Expansion Project Environmental Assessment.

Llewelyn Matthews provided this update. He said that, as most of the TGG is aware, the Waneta project is located at the confluence of the Pend Oreille and Columbia Rivers; immediately upstream from Waneta are Sevenmile and Boundary Dams. Matthews' presentation touched on the following major topics:

- Who owns the rights to the electricity produced at the project (Columbia Power and Cominco)
- Who is funding the Waneta expansion (joint venture between Columbia Power and the Columbia Basin Trust)
- The basic concepts of the Waneta expansion project – up to 435 MW
- A schematic of the project and expansion
- Key assessment issues in the scoping projects for the environmental assessment – contaminated sediments, flow changes, load shaping etc.
- The timeline for the expansion process – public comments received and incorporated, final terms of reference have been submitted, approval expected within two weeks. Environmental assessment application to be filed by the spring of 2005, with a decision expected by the fall of 2005. Design/build contract for the project will be awarded in the 2006-2007 timeframe, with the project up and running by the spring of 2009.
- Planned TGP studies for the project
- Past modeling efforts
- Planned TGP monitoring efforts
- Plans for a longterm monitoring station upstream of the dam

The group discussed the deficiencies of the data produced by the fixed

monitoring station below Boundary Dam, which influences the monitoring efforts at Waneta; Sharon Churchill noted that there are many serious hydrologic and bathymetric challenges associated with this site. She said that, if Columbia Power wants to contribute to the reliability of the database, they might consider installing data strings above and below Waneta, monitoring for a minimum of four or five years and developing coordination coefficients for the site. From that, you would be able to develop a mass/balance equation, she said.

Matthews also provided a brief update on the Brilliant expansion project; the expansion is currently under construction, and he showed a series of photographs of the site. The in-service date for the expansion is fall 2006.

7. Pend Oreille TMDL Quality Assurance Project Plan.

Pickett led this presentation; working from a series of PowerPoint slides, he touched on the following major topics:

- Why a TMDL on the Pend Oreille River (temperature and total dissolved gas data exceed the Washington State water quality criteria)?
- Geographic scope and jurisdictions – primarily Washington State waters from the border with Canada to the border with Idaho
- The geographic area of the TMDL (map)
- TDG generation processes
- Dams on the Pend Oreille River: Boundary, Box Canyon, Albeni Falls, others upstream on the Clark Fork
- Photos of these projects
- The TDG technical study, including TDG monitoring by the dam owners, WDOE paired monitoring and WDOE continuous monitoring
- The TDG TMDL development process – analyze TDG generation processes, analyze the effects of natural influences, spreadsheet analysis or modeling

Moving on to the water temperature TMDL study, Pickett touched on

- What's the problem with temperature (solar influence on a wide, open river, high temperatures harmful to aquatic life, temperature in the Pend Oreille exceeds water quality criteria)
- Temperature processes
- Temperature standards address changes (how have conditions changed from natural? etc.)
- The temperature technical study – water temperature monitoring, evaluation of ground water influence, meteorological and flow data, modeling of river (current vs. natural)
- Review and submittal of TMDLs – the development of the TMDL technical analysis and implementation plan, coordination with stakeholders, informal review of preliminary draft TMDL, formal review and public comment on final draft, TMDL issued by Washington for state waters and submits to EPA, EPA

adopts for tribal waters

Pickett invited anyone with questions about this process to contact him at 360/470-6882.

8. Update on Chief Joseph Flow Deflectors.

Kent Easthouse said the Chief Joseph flow deflectors are now in the final design phase; he presented a series of slides, referencing the following topics:

- Chief Joseph's pre-deflector project configuration and spill patterns (photo)
- The purpose of the project – to reduce gas production at Chief Joseph to the greatest extent technically feasible
- The history of the flow deflector project
- The dissolved gas problem at Chief Joseph
- A description of the deflector design
- Project status – funding received in FY'03, final design work now underway; mitigation hatchery planned for loss of tribal fishing opportunities, the various phases of the construction process
- The construction schedule – installation to begin in February 2005; complete by the spring of 2007

He asked anyone with questions about the project to contact project manager Joe Ryan.

9. Update on VARQ Letter from TGG.

Easthouse said the Corps' VARQ EIS is now moving forward. The Corps is looking at Libby and Hungry Horse, and is developing a monthly time-step model, which and is expected to be ready for use in 2005. He asked anyone with questions to contact him directly at 206/764-6922 for further information.

10 Albeni Falls TGG Study.

Easthouse said the Corps' Seattle District conducted this study of TDG production at Albeni Falls in 2003. He reminded the group that Albeni Falls Dam regulates Lake Pend Oreille, a 1.2-MAF storage reservoir. The project, with a powerhouse capacity of 30-40 Kcfs, spills frequently. He described the project configuration, including its lack of a stilling basin. Easthouse noted that the dissolved gas study was mandated by the 2000 BiOp; it was not a spill test, but was intended to study the project's gas production under a full range of normal operations.

Easthouse said the study objectives included the following:

- Understand TDG concentrations and processes associated with the full range of

- operations
- Determine how Albeni Falls impacts TDG in the Pend Oreille River (there were others)
- Determine whether there is an optimum spill pattern to minimize Albeni Falls TDG production

Easthouse went on to touch on the following major topic areas:

- The study design
- The location of Albeni Falls and other nearby dams, such as Box Canyon
- The TDG sampling array above and below Albeni Falls Dam
- Depth soundings below the Albeni Falls spillway
- Forebay sampling locations
- Water quality sampling instrumentation (Hydrolab), parameters measured, temporal sampling distribution
- 2003 Pend Oreille River conditions (an average water year)
- 2003 Pend Oreille daily flows vs. historical flows.

Mike Schneider then provided an overview of the results of the study, which he characterized as somewhat preliminary:

- The operating conditions sampled during the season
- A summary of Albeni Falls project operations, May 6-July 7, 2003 (peak spill of 47 Kcfs occurred on June 5)
- Albeni Falls TDG exchange: forebay TDG level range 101% to 116.4%; lateral gradients as high as 3-4%; powerhouse releases generally do not change TDG pressures; TDG near right bank biased by Priest River inflow
- Forebay TDG pressure and Albeni Falls Dam operations, 2003 (graph)
- Further Albeni Falls TDG exchange information: spillway releases can result in elevated TDG pressures in the Pend Oreille River; Spill TDG levels are affected by spill pattern, tailwater channel depth, project head, forebay TDG and gate submergence. The bulk spill pattern generally yields higher rates of TDG exchange, and some spill events retained forebay TDG levels. Entrained air is limited.
- TDG pressures above and below the dam, May 6-July 7 (graph).
- TDG saturation in the Pend Oreille River below Albeni Falls Dam, by transect, with 47 Kcfs spill (graph)
- TDG pressure above and below the dam by transect, May 28-30 (when spill went from 25.1 to 27.7 Kcfs) (graph)
- Delta TDG pressure in spill as a function of total spill discharge at Albeni Falls, 2003 (graph)
- Delta TDG pressure in spill as a function of specific spillway discharge at Albeni Falls Dam, 2003 (graph)
- Conclusions: TDG supersaturation conditions were observed in the forebay; Priest Rapids flows bias forebay TDG levels near the right bank; Spill at Albeni Falls during 2003 made a small contribution to TDG levels in the Pend Oreille

River

- Recommendations: uniform 10-bay spill pattern, locate forebay FMS away from the right bank; locate tailwater FMS downstream at the USGS gauge; evaluation of in-pool TDG exchange processes; continued monitoring for TDG.

In response to a question from Pickett, Schnieder said the latter recommendation would include tracking TDG as it makes its way downstream from the project. In response to another question, Schneider said the gate openings at Albeni Falls can be changed only in 1- or 1.5-foot increments. And are the results from this analysis available in memo form? another participant asked. Not yet, Schneider replied; he said he will make today's PowerPoint presentation available to Mark Schneider so he can post it to the TGG website.

11. Lake Roosevelt/Mid-Columbia TMDL.

Helen Rueda said the public comment period on this TMDL ended in March; EPA is in the process of editing, responding to comments and initiating the EIS process. The final draft of the TMDL will be out in May, and it will then be up to EPA to approve it, she said. Is the TMDL still based on the old Washington State standard? Jim Irish asked. It is, but the old and new TDG standards are basically the same, in terms of criteria, Rueda replied – we won't need to update anything once the new standards are approved. Did the Lake Roosevelt/Mid-Columbia TMDL follow the Lower Snake/Lower Columbia TMDL model, with respect to short-term and longer-term strategic/implementation phases? Mark Schneider asked. It is based on the previous Lower Snake and Lower Columbia implementation plans, with both longer-and shorter-term standards, Rueda replied. And what is the possibility of issuing an allocation that cannot be met? asked another participant. Because it's always possible that it could be met at some point in the future, Rueda replied. Basically, it's a legal question, added Irish.

Did you get into the TDG levels coming down from Canada and their impacts on Lake Roosevelt and Mid-Columbia TDG levels? Pickett asked. Not in detail, Rueda replied.

12. Update on Columbia System Hydroelectric Project Data Summary Table.

Rueda distributed copies of the most recent draft of the project data summary table; she drew the group's attention to the last page of this document, which detailed the various categories of information she is looking for at each project. She asked that the other TGG participants look over this back page, as well as the project contact information on the back of the first page, and provide any relevant data they might have directly to her by the end of May at rueda.helen@epa.gov. And will you put this online? another participant asked. That's the intent, yes, Rueda replied. Schneider reiterated the request that all TGG participants look over this table and provide any additional information they may have to Rueda as soon as possible.

13. Risk Factor Analysis in Columbia Water Use Plans.

Larry Birch noted that this agenda topic was suggested at the last TGG meeting, in regard to the impact of the various ongoing Canadian implementation planning processes on TGP production in the Lower Columbia River in Canada. Birch went through a PowerPoint presentation titled “Lower Columbia River (Canada) TGP Risk.” He touched on the following major topic areas:

- TGP at Keenleyside (past practice)
- Rationale for developing GBT risk
- GBT risk (a relative risk factor – uses time to 20% mortality, combined with temperature influence, uses a lower threshold limit of 115% set as the limit in the river environment below which no GBT risk was likely; does not take into account the depth behavior of fish, but assumes fish behavior is unchanged across alternatives)
- Time to 120% mortality and GBT risk (graph) – take-home message is the mortality risk is 215 times greater at 145% TGP than it is at 115%
- Time to 20% mortality vs. temperature (the higher the temperature, the lower the time to 20% mortality) (graph)
- The GBT risk assessment calculation
- Results of the TGP risk assessment for Keenleyside and Arrow under the four flow alternatives included in the GBT risk assessment (table)
- GBT assessment is a relative, rather than an absolute, risk assessment.
- Conclusion: the methodology for the Columbia River below Keenleyside Dam (missed that – he wouldn’t leave the conclusions up, despite my request that he do so).

Birch added that the risk assessment used only rainbow trout, so the effects on other species are unknown. In response to a question from Maynard, Birch said that, from a regulatory perspective, there is no set standard these projects are required to meet, although the guideline is 110%. This assessment was used only for the Lower Columbia water use planning process, he said.

14. Northwest Hydrogen Initiative.

Pickett distributed a PowerPoint presentation made last June at a conference in Seattle. He noted that he has been following the Northwest Hydrogen Initiative for the past year, and had realized that, if the region could store hydrogen, that offers significant opportunities over the short term to develop hydrogen generation alternatives that could reduce hydrogeneration and TDG/water quality problems in the Snake/Columbia system.

The presentation touched on the following major topics:

- the goal of the initiative: a world-class hydrogen industry headquartered in the

Northwest

- who is currently involved in the NW Hydrogen Initiative
- prospective partners
- the DOE solicitation (funding)
- the water-to-hydrogen extraction process
- the current hydrogen infrastructure
- the transportation infrastructure (Phases I and II)
- its use in electric grid reinforcement – demonstrations proving hydrogen-powered generation can help meet soaring electric power demand – hydrogen storage – clean peak power generation – power back to the grid for peak shaving.

Pickett noted that, currently, the main problem facing the Initiative is hydrogen storage; PNNL is looking into that question as we speak. Under the current state of the art, for example, it would be possible to pack enough hydrogen into a car to drive it for about 100 miles. B.C. Hydro also has a major initiative underway to develop an infrastructure to support hydrogen-powered vehicles, Pickett said. Birch noted that B.C. Hydro's trucks in Vancouver already run on hydrogen.

Basically, I wanted to put the bug in the TGG's ear that this technology is coming, and if it can be linked into the hydrosystem, it could have major impacts on water quality in the Columbia, Pickett explained.

15. Next TGG Meeting Date and Location.

The next Transboundary Gas Group meeting was set for October 13-14 in Penticton, B.C. Meeting summary prepared by Jeff Kuechle.